

# MARINE REVIEW.

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## Engines of the Steamer Bannockburn.

A very good engraving of the engines of the Canadian steamer Bannockburn appears on this page. The Bannockburn was built by Sir Raylton Dixon & Co. of Middlesbro on Tees, England, for the Montreal Transportation Company of Montreal, Canada, and was engined by the Northeastern Marine Engineering Company, Limited, of Wallsend on Tyne. She was cut in two in order to bring her to the lakes through the St. Lawrence canals, and has just finished her first trip from Kingston to Fort William and return, bringing down to the former port 61,000 bushels of wheat on a draft of 14 feet. Her principal dimensions are 254 feet length, 40 feet beam and 21 feet 4 inches moulded depth. The picture of the engines is printed in order to convey an idea of the style followed on the other side in machinery for a boat of this kind. An extended description of this machinery will be given later.

## Rockefellers in the Iron Business.

For several weeks past the people of Ashtabula, the great iron ore receiving port of Lake Erie, have been very much worked up over preparations being made at that port for the erection of a steel plant. A great deal of mystery has attended the operations of the projectors of the enterprise, who have been working under the name of the Steel and Iron Improvement Company of Pittsburg, Pa., but it is certain they have secured options on about 3,000 acres of land, and have broken ground for some portions of the works. Of late everything in the way of big boom schemes in newspapers is credited to the Rockefellers, and the REVIEW is not desirous of appearing as a party to the sort of sensational journalism that has connected Standard Oil interests with various monopolies, but a summary of the Ashtabula scheme given us by a Cleveland iron merchant is printed here for what it is worth.

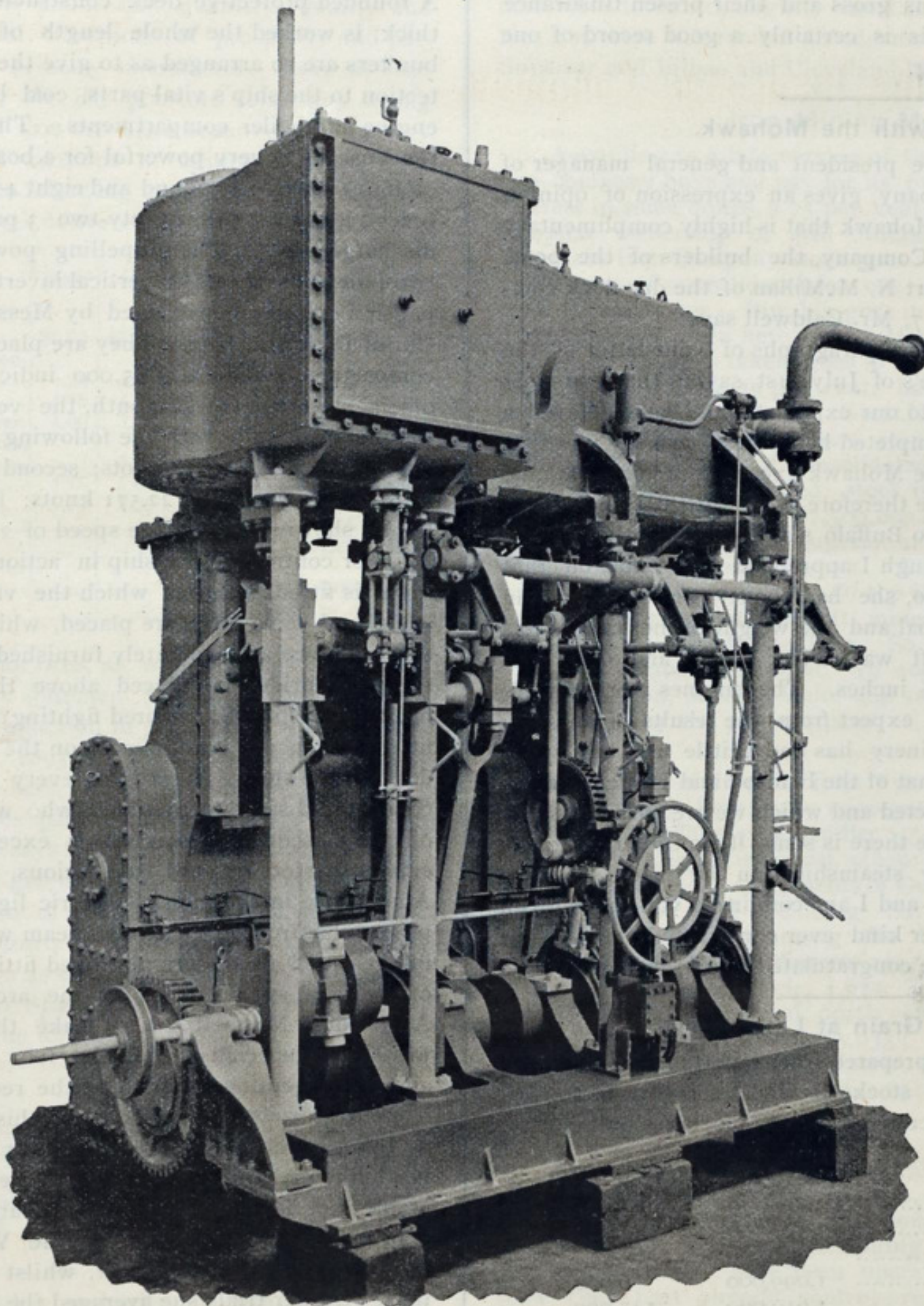
"The Rockefellers are preparing," says our informant,

"with the Bessemer ore interests which they have acquired in the Missabe range, and also their interests in the transportation business of the lakes, to control the steel industry of this country, and they are back of the big project just undertaken at Ashtabula. In a few years Carnegie and the Illinois Steel Company will not, to use a common expression, be in it with them. Cheap open hearth steel, the high grade material in iron, is what this country now demands to compete with the world, and the

Rockefellers, with their unlimited surplus money have undertaken the work of producing it with the Adams-Blair direct process. Iron men all admit that steel can be produced by this process, and the Standard Oil people have satisfied themselves that it can be produced at a cost lower than by other processes. At Ashtabula, on the shore of Lake Erie, which it has always been conceded is the central point for the meeting of raw materials in iron, they will have connections with three trunk line railways, the Lake Shore and Nickel Plate east and west, and the Pennsylvania to the south, and on the 3,000 acres of land which they have selected they will not only erect a steel works but also mills and manufactories for the consumption of the product of the steel works. Twenty 20-ton open hearth furnaces, the number put down for the steel plant, would produce about 2,000 tons of steel a day, which is more than double the present open hearth capacity of the Carnegies, and in fact a great deal more than the entire

Carnegie output in both Bessemer and open hearth works.

In answer to an inquiry, Supt. J. W. Gilman of the Goodrich Transportation Company says with reference to the report of a race between the twin-screw steamer Virginia and the whaleback Columbus: "We have done no racing with the Virginia and do not intend to. We have too much at stake to cater to anything of the kind. I know nothing about \$5,000 being up on the imaginary race and rather think there is nothing in it."



BRITISH BUILT ENGINES OF THE BANNOCKBURN.



### A Ship Builder's Record.

In 1871 Capt. W. H. Radcliffe, whose death was announced last week, began building wooden vessels at the head of the old river bed, Cleveland, and in the twenty years that followed up to the time of his retirement from the management of affairs of the Ship Owners' Dry Dock Company two years ago, he built the schooner Genoa, steamer Havana, tug Triad, steamers John N. Glidden and A. Everett, tug Drednaught, steamer R. P. Ranney, tug George R. Paige, steamer Robert Wallace, schooner David Wallace, steamer J. H. Outhwaite, tug Dan Connelly, steamers Wiley M. Egan, M. B. Grover, Frank L. Vance, Philip Minch, Gladstone, Passadena and Hesper.

All of these nineteen vessels, excepting probably the tug Triad, are still in commission, the steamers ranking among the best wooden vessels on the lakes. The aggregate tonnage of the entire fleet is 15,792 tons gross and their present insurance valuation \$1,020,000. This is certainly a good record of one man's work in ship building.

### Pleased with the Mohawk.

Mr. S. D. Caldwell, vice president and general manager of the Western Transit Company, gives an expression of opinion regarding the new steamer Mohawk that is highly complimentary to the Detroit Dry Dock Company, the builders of the boat. Writing to Secretary Gilbert N. McMillan of the dry dock company under date of August 7, Mr. Caldwell says:

"Referring to the closing paragraphs of your letter of the first inst., and Mr. McVittie's of July 31st, saying that you trust the Mohawk has come up to our expectations, I have delayed a reply until the ship had completed her trip. I can say now that the carrying capacity of the Mohawk exceeds our expectations, and in that respect we are therefore fully satisfied and more. On her run from Chicago to Buffalo she had no weather to test her sea going qualities, though I apprehend no trouble on that score. On leaving Chicago, she had about as close as we can estimate it, 100 tons of coal and the weight of her cargo was 3,004 tons. Her mean draft was 16 feet  $\frac{3}{4}$  inch and on arrival at Buffalo it was 15 feet  $9\frac{1}{2}$  inches. The engines worked well, causing no delay, and we expect from the results of this run down, that when her machinery has had a little use, her speed will be about the same as that of the Hudson and Harlem, which I believe is what you expected and which we are entirely satisfied with. While of course there is some little tinkering to do, as is the case with all new steamships, on the whole we have nothing to find fault with, and I am convinced you have given us the best steamship of her kind ever constructed. Both your company and ours are to be congratulated upon this result."

### Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on Sept. 23, 1893:

	Wheat, bu.	Corn, bu.
Chicago.....	18,960,000	2,862,000
Duluth.....	3,498,000	.....
Milwaukee.....	941,000	.....
Detroit.....	1,099,000	6,000
Toledo.....	1,610,000	147,000
Buffalo.....	1,563,000	506,000
Total.....	27,671,000	3,521,000

At the points named there is a net increase for the week of 39,000 bushels of wheat and 10,000 bushels of corn.

A British chart of Lake Superior taking in the entire lake, and giving detail regarding the north shore that is not to be found on United States charts, can be had from the Marine Review for \$1.

### Pride of the Japanese Navy.

During the past year there has been constructed at the yard of Armstrong, Mitchell & Co., Newcastle, on the Tyne, England, a fine fast protected cruiser for the Japanese government, and at her recent speed trials she clearly demonstrated the fact that she is at present the fastest cruiser afloat. This interesting craft, which is known as the Yoskino, has a length of 350 feet, an extreme breadth of 46 feet 7 inches and a mean draft of  $17\frac{1}{2}$  feet, with a corresponding displacement of 4,165 tons. She is constructed entirely of steel, including the stem, stern and rudder posts. The hull is minutely divided into numerous water-tight compartments by means of longitudinal and transverse bulkheads, while a double bottom is fitted the length of the machinery and boiler spaces, this being virtually extended fore and aft by means of water-tight plate to the magazines, store rooms, etc. A rounded protective deck constructed of steel plates 3 inches thick, is worked the whole length of the vessel, and the coal bunkers are so arranged as to give the greatest measure of protection to the ship's vital parts, coal being stored all around the engine and boiler compartments. The battery or armament of the Yoskino is very powerful for a boat of this class, consisting of four 6-inch, 100 pound and eight 4-inch, 33 pound quick firing breech loading rifles, twenty-two 3 pounders and five torpedo discharge tubes. The propelling power of the craft consists of two independent sets of vertical inverted, direct-acting triple expansion engines, constructed by Messrs. Humphrey, Tenant & Co. of Deptford, Eng. They are placed in separate water-tight compartments and are of 15,000 indicated horse power. On her official speed trials last month, the vessel made four runs over the measured mile with the following results: First run against a two knot tide, 22.642 knots; second run with tide, 23.377 knots; third run against tide, 22.571 knots; fourth run with tide, 23.762 knots; showing an average speed of 23.03 knots per hour.

For controlling the ship in action an armored steel conning tower is fitted, inside of which the various telegraphs, steering wheel and voice pipes are placed, whilst for ordinary cruising in time of peace an elaborately furnished chart house, opening on the flying bridge, is placed above the armored tower. Two military masts with armored fighting tops and machine guns are fitted, one forward and one aft on the raised hurricane or bridge deck. The ship is fitted with every modern appliance for the comfort and safety of 320 men who will form her crew. The officers' accommodation aft is exceptionally fine, whilst the crew's quarters forward are spacious, well lighted and ventilated. A complete installation of electric lights is fitted, including two powerful search lights, whilst steam windlass, capstan and steering gear and all modern approved fittings make the Yoskino one of the finest specimens of marine architecture afloat. Messrs. Armstrong, Mitchell & Co. make the construction of foreign war ships a specialty. All the four boats representing Brazil and the Argentine Republic in the recent naval review in New York harbor, were constructed by this English firm. The Naeve de Julio, which represented the latter nation, had only just left her builders' hands, and during the review she attracted considerable attention by her graceful appearance and great speed. She is in reality the predecessor of the Yoskino, her length being 350 feet and her beam 44 feet, whilst her displacement is 3,560 tons. On her trials she averaged the high speed of 22.785 knots, thus breaking the world's record for a boat of her class, it being previously held by the Italian cruiser Piemonte, of 2,560 tons and 13,000 horse power, constructed at the Elswick Works, England. The Piemonte's average speed in two runs over the measured mile was 22.3 knots an hour. WILLIE FAIRBURN.

IF YOU SEND 50 CENTS TO THE MARINE REVIEW, NO. 516 PERRY-PAYNE BUILDING, CLEVELAND, O., AND YOU ARE NOT SATISFIED WITH THE BOUND VOLUME OF FIFTEEN PHOTOTYPES OF LAKE STEAMERS THE MONEY WILL BE REFUNDED TO YOU.



## Some New Statistics from Hon. Geo. H. Ely.

Although Hon. George H. Ely of Cleveland has for many years been writing on the subject of the iron ore business of this country, with special reference to the trade of the Lake Superior region, his papers and addresses are always interesting, as they are certain to contain some new features of a statistical nature that show special care in preparation. His recent argument in behalf of the Western Iron Ore Association before the ways and means committee of Congress, in favor of a retention of the present duty of 75 cents a ton on iron ore, was especially commended on account of his connection with the development of Cuban iron ore producing property, and although it was of necessity largely made up of data presented on similar occasions in the past, it contained some statistics that were carried up to a very late date. In support of the claim that quantity, quality and reduced prices, the essential conditions of prosperity and permanence as to materials of primary manufacture, have all been attained under protection, Mr. Ely presents some very strong arguments. That prices of iron ore have been reduced to very low figures under improved methods of mining and domestic competition is shown by the following table, which has reference to leading Lake Superior ores delivered at Lake Erie ports:

GRADES.	1888.	1889.	1890.	1891.	1892.	1893.
Republic and Champlain No. 1 .....	\$5.75	\$5.50	\$6.50	\$5.50	\$5.50	\$4.50
Cleveland and Lake Superior specular No. 1, non-Bessemer .....	5.25	5.00	6.00	5.00	5.50	4.00
Chapin .....	4.75	4.50	5.50	4.25	4.25	3.65
Soft hematites, No. 1 non-Bessemer .....	4.00	3.75	4.50	3.75	3.75	3.25
Gogebic, Marquette and Menominee, No. 1, Bessemer .....	.....	5.00	.....	.....	.....	.....
Hematites .....	4.75	5.00	6.00	4.75	4.50	4.00
Minnesota No. 1 Bessemer .....	5.75	5.50	6.50	5.50	5.55	*4.25
Minnesota No. 1 non-Bessemer .....	.....	.....	.....	.....	4.85	.....
Chandler No. 1 Bessemer .....	.....	.....	.....	.....	4.85	*4.15
Lake Superior and Lake Angeline extra low-phosphorus Bessemer .....	.....	.....	.....	.....	6.00	4.65

\*Estimated by the REVIEW.

Dealers in Lake Superior ores, as well as consumers, will readily see that in the above statement Mr. Ely is very conservative in quoting the actual reduction in prices from year to year, as the figures set down for 1893 are above the actual prices at which the ores named have been and are now selling.

In comparing the wages paid in the production of foreign and domestic ores, Mr. Ely says: "The latest published comparisons on this subject are given in a paper presented before the Mechanical Science Section of the British Association, by Mr. Jeremiah Head, a high authority in the iron trade on both sides of the ocean. A comparison as to hours of labor, wages per day in ore production, at Bilbao, Spain, Cleveland, England, and on Lake Superior is given in the following table:

DISTRICT.	Hours of Labor.	WAGES PER DAY.		
		Drillers or Miners.	Common Laborers.	Boys or Women.
Bilbao, Spain .....	72	\$0.604 to \$0.726	\$0.362 to \$0.604	\$0.242 to \$0.362
Cleveland, England ..	46	1.21	0.726 to 0.846	0.242 to 0.604
Lake Superior, U. S.	55 to 60	2.25 to 2.75	1.60 to 2.00	Boys \$1 to \$1.25

"The wages then, by this authority, of miners on Lake Superior are more than three and three-quarter times those at Bilbao, and more than double those in the English, Cleveland, district.

"By the same authority it is shown that the labor cost per ton of ore at Bilbao is 10 cents. In the English, Cleveland, district it is 23 cents. But the labor cost per ton of metallic iron is three and a half times as much in the Cleveland district as at Bilbao. The average labor cost per ton of ore on Lake Superior, at one mine, has been 89¼ cents; at another, \$1.33. The manager of one of the largest producing mines in the Menominee district, Lake Superior, reports to me the average labor cost per

ton during the past eight years to be \$1.29. The average cost per ton excluding royalty, taxes, interest, etc., for same period \$2.01. A large producing mine in the Marquette district, exclusively hard ore, reports for the same period \$1.60 as the average labor cost per ton; the average total cost per ton, \$2.32, average wages paid \$2.10 per day.

"If now we compare the average of this cost of mining soft and hard ores in these two districts of Lake Superior with the Bilbao cost per ton, it will appear that the labor cost per ton on Lake Superior is ten times that of Bilbao and more than four times that of Cleveland, England. Making allowance for the higher metallic content of Lake Superior ore, the labor cost of a ton of Lake Superior ore is still not less than eight times that at Bilbao. An increase in the proportion of Lake Superior soft ores tends to reduce slightly the Lake Superior labor cost per ton, but there will remain an enormous difference between Lake Superior and Bilbao and Cleveland labor cost per ton."

## Iron Mining Matters.

According to a late version of the Missabe combination the new company buys and pay for its own stocks at 51 per cent. interest in some mines, a 75 per cent. interest in others, and a complete ownership of still others. For transfer purposes Mountain Iron Company stock goes in at \$218.19 per share, or 4.36 shares of consolidated for one of Mountain Iron; 51 per cent. is taken over. Biwabik goes in at \$96.97, or 1.93 for one; 51 per cent. is taken here also, Missabe Mountain, of which the same amount is taken, goes in at \$68.40, being 1.37 shares to one. Shaw, on a 75 per cent. basis, goes in at \$13.33 per share, or 0.26 share for one. Great Northern and Great Western both of which go in entire, are respectively on a basis of 0.28 and 0.16 share to one of consolidated. Of Adams, 51 per cent. going into the consolidated, stock is 1 to 1. Rathbun, an unstocked mine, is put in at \$2,500,000 consolidated stock, presumably at par. The Lake Superior and Lone Jack leases are also in, the former at about 0.32 to 1. All of the McKinley goes in, fee and lease at \$1,000,000. Of the above all but the last five are what are known as Merritt mines, having been largely exploited by the Merritt brothers. So far about \$17,000,000 of consolidated stock is in sight. In addition to these the Lowmore, Shannon, Missabe Chief and others are under negotiation for purchase by the new company.

Shipments of iron ore from Two Harbors up to and including Wednesday, Sept. 20th, aggregated 721,481 gross tons and were divided as follows: Chandler, 350,335 tons; Minnesota, 304,839; Zenith, 7,643; Cincinnati, 9,939; Canton, 24,411; Franklin, 22,168; Hale, 2,176. Shipments of Gogebic range mines through Ashland up to and including Saturday, Sept. 16, foot up 929,532 tons, divided among the different mines as follows: Ashland, 27,760 tons; Aurora, 134,552; Colby No. 2, 35,770; Tilden, 103,556; Germania, 4,975; Iron Belt, 17,625; Montreal, south vein, 1,347; Montreal, north vein, 27,235; Eureka, A, 1,949; Brotherton, 14,643; Comet, 5,035; Eureka, 24,156; Careys, 44,214; Newport, 87,763; Norrie, 208,689; East Norrie, 68,066; Pabst, 87,665; Jack Pot, 1,651; Davis, 11,353; Sunday Lake, 17,525.

As one of the Cleveland stock holders of the Minnesota Iron Company remarked a few days ago, the story of a combination of iron interests headed by that company seems a little like ancient history, as the allied mining, land, railway, and steamship companies that have been operated under that name for some time past already control everything that is valuable in the way of mineral lands in Minnesota excepting the Missabe. They have a very large slice of the Missabe also, and the indications are that by next year they will have a new railway connecting some of their best Missabe properties with shipping docks on Lake Superior.

ONE FARE TO CHICAGO AND RETURN—Via the Nickel Plate road Monday, October 2d. Tickets good on all trains.

NICKEL PLATE ROAD—Has another one fare excursion to the world's fair October 2nd. Cagice of trains. Tickets good ten days including date of sale.

WORLD'S FAIR EXCURSION—October 2nd via the Nickel Plate road. One fare. Superb new train service.



## Lake Michigan Lumber Trade—Chicago Matters.

WESTERN OFFICE, MARINE REVIEW,  
No. 701 Phoenix Building, CHICAGO, Ill., Sept. 28.

While the grain movement was very good during the week, the lumber trade shows no signs of picking up this season. Several boats have stripped for the winter, and others will follow in quick succession. The steam barges keep going, but they do not get around as often as they did in good times. Lumber yards are chuck full, and as there are no sales there is no show for a good movement until next season.

A very interesting yacht race occurred here Saturday. It is seldom that so large a number of entries are obtained so late in the season. Twenty-two boats crossed the line, and started out in what was a half gale for them. Only four boats covered the course, and the rest met accidents. Two of the big fellows fouled to the great damage of both. The big *Detroit*, *Crusader*, seems to have been in fault from the decision of the Judges, and her opponent, the new schooner *Hawthorne*, the most modern boat here, was badly used up and towed in.

Steam yachts here are adopting steamboat manners and are sinking each other. It is said that there has been a good deal of wild navigation done by these handsome little craft in the past and it is to be hoped that the *Volant-Ollie* collision, which resulted in the sinking of the latter boat, will tend to make the masters more careful in close quarters.

When boats sink where it is possible for them to be raised, the spot is generally buoyed, so as to make the recovery quicker. It is wonderful how far away from the boat the buoy may be placed. When the wreckers went after the *Ollie*, which was sunk in the narrow part of the basin in 20 feet of water, they dragged the ground in the vicinity of the mark for half a day and finally found the boat 150 feet away. When the tug *Chicago* was sunk last season, several days were taken up in hunting for her before she was found.

## Inventions of a Marine Nature.

Specially reported from the patent office Washington, D. C., for the MARINE REVIEW

503,571—Method of making anchors, by William H. Fisher of Gloucester Mass.; filed Feb. 3, 1892; serial number 420,453.

503,694—Anchor, by Joseph W. Byrne of Boston, Mass.; filed July 16, 1892. A slotted crown is provided with palms and two lugs flanking the slot. The shank has a head which engages the lugs, and a clamp prevents the shank slipping from the crown.

504,120—Spindle-shaped ocean steamer, by Wm. L. Winans of London, England; filed May 31, 1893. The hull is spindle-shaped, of a length not less than 600 feet and of a width not more than one-thirteenth the length.

504,206—Device for cutting ships cables, by Francisco V. DeBem of Gloucester, Mass.; filed Oct. 9, 1893. The cutter travels down the cable and when suddenly jerked operates to sever the same.

504,211—Ship's paint, by Hugo Gollinowski of San Francisco, Cal.; filed March 30, 1893. The compound is of hydromagnesite, quicksilver, chloride, magnesium chloride and metallic oxide.

504,878—Machine for pressing boats from sheet metal, by William Heslop of Wakefield, Eng.

Copies of specifications accompanying these patents can be had at 15 cents on each application to THE MARINE REVIEW, 516 Perry-Payne building, Cleveland, O.

## To Test the Harter Law.

Special Correspondence to the MARINE REVIEW.

BUFFALO, N. Y., Sept. 28.—The curious, many-sided law suit that grew out of the collision of the steamer *Craig* with the barge *Wenona* last week is likely to test the Harter law pretty thoroughly. There was a previous affair in which a canal boat was damaged by the steamer *Ralph*, when the defense also put up the Harter law as part of the answer, but the loss was so small that it will probably be settled without coming to trial. In the present case the *Wenona* was damaged considerably upwards of \$1,000, so that a settlement is improbable, especially as both local tug lines are involved, one being engaged in towing the *Craig* and the other the *Wenona*. If the wording of the law—as really seems to be the fact from an ordinary point of view—is sufficient to protect all vessels carrying cargo from liability in collisions, instead of merely from their own cargo, as was intended, Congress will be called on to repeal the law forthwith. So confident are certain marine lawyers here that such is the case that they set up the law as a defense in every instance. They declare that even Harvey D. Goulder, who has come out bravely to the defense of the law, as meaning what it was intended to, is not nearly so sure of his ground when in Buffalo as he was in his Cleveland interview. The case is a very serious matter for Capt. Davis, owner of the *Wenona*, as he can ill afford to stand the long litigation in prospect.

The question of the indictments against the Brights in the Tiogo explosion case, which came up at the present term of the United States circuit court here, is received with very widely different comment from various sources. Their friends are pleased that they have escaped further punishment in such a matter. They had already paid the Union Steamboat Company \$47,000 in damages, and it is held by some that this, added to the heavy costs of the suits

is enough, though the other side sees a vessel with all on board doomed to certain destruction had the explosion taken place in mid-lake, just to allow shippers to send out goods under a fictitious name, in order to reduce the freight on them. It is at least to be regretted that the criminal indictment was dismissed on a technicality, as the principle of shippers' liability remains unsettled.

## Delay at Ogdensburg.

Special Correspondence to the MARINE REVIEW.

KINGSTON, Ont., Sept. 28.—A blockade has existed at Ogdensburg for several days past. There are a dozen or more steamers there and they have been awaiting discharge for from three to twelve days. This means much loss of money. No demurrage is permitted so far as the Montreal Transportation Company is concerned. The Kingston and Montreal Forwarding Company has handled over 6,000,000 bushels of grain and has paid about \$300 demurrage. It has handled pretty satisfactorily all the grain sent in its charge.

The steamer *Bannockburn*, the vessel secured in England by the Montreal Transportation Company, has arrived down on her maiden trip from Fort William with 61,000 bushels of wheat on a draft of 14 feet, even. She was guaranteed when built to have a capacity of 60,000 bushels. The Montreal company is now engaged in building a barge of large capacity. The manager says he expects to give employment to about 200 workmen during the coming winter. There has been such a demand for barge space that little repairs could be made in them during the past season. The Calvin company, Garden island, is erecting a large tug for use on the river. This company handled this year fourteen rafts of timber for Quebec.

## Record of Speed and Big Cargoes.

[Masters or owners of freight boats are invited to report improvements on this list.]

Iron ore: Maritana, Minnesota Steamship Company of Cleveland, 4,260 gross or 4,771 net tons, Escanaba to South Chicago; S. S. Curry, Hawgood & Avery Transit Company of Cleveland, 3,852 gross or 4,314 net tons, Escanaba to Fairport.

Grain: Selwyn Eddy, Eddy Transportation Company of Bay City, 139,820 bushels of wheat, Detroit to Buffalo; Centurion, Hopkins Transportation Company, St. Clair, Mich., 147,812 bushels of corn, Chicago to Erie; Onoko, Minch estate, Cleveland, 187,657 bushels of oats, Chicago to Buffalo.

Coal: E. C. Pope, Eddy Bros. of Bay City, 3,950 net tons anthracite, Buffalo to Chicago.

Speed: Owego, Union Line of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour.

## Bills Introduced in Congress.

Representative Cummings has again introduced a bill in the present Congress empowering the secretary of the treasury to maintain communication between light-houses and life saving stations on the coasts and shores of the United States, and providing for an appropriation of \$150,000 for that purpose.

A bill introduced by Mr. O'Neil of Massachusetts provides that such parts of the last three river and harbor bills passed by Congress as give to the secretary of war authority in matters pertaining to structures over navigable water ways shall not apply to structures erected prior to the passage of this (Mr. McNeil's) act under authority of the legislature of any state, nor to the repair, renewal or maintenance of such structures as so authorized.

Other measures introduced in the House within the past few days and referred to the committee on commerce were: By Mr. Hangen, (H. R. 3235) to authorize the Duluth Transfer Railway Company to construct a bridge over the St. Louis river between the states of Minnesota and Wisconsin, near the village of West Duluth; by Mr. VanVoorhis of New York, (H. R. 3420) to remove the obstructions from the channel leading from Lake Ontario into Irondequoit bay; by Mr. Cogswell, (H. R. 2795) providing that hereafter the life saving stations upon the sea and gulf coasts at which crews are employed shall be manned and the stations opened for active service on the first day of August each year, and so continued until the first day of June succeeding, and upon the lake coasts from the opening to the close of navigation, except such stations as in the discretion of the secretary of the treasury are not necessary to be manned during the full period specified; by Mr. Baldwin, to equalize the pay of steamboat inspectors.

Only two new lake vessels were recorded last week in the office of the United States commissioner of navigation. The sloop *Roady*, Chicago, of 5.71 tons gross and 5.42 net, was numbered 111,045, and the tug *C. D. Thompson*, Port Huron, of 91.74 tons gross and 45.87 net, will be known officially as No. 126,998.



### Lake Freight Matters.

With a marked change for the better in money matters throughout the country, some of the best mining companies on the Missabe iron range have been enabled to begin an active movement of ore that was intended for shipment earlier in the season, and there is little doubt that the advance that has taken place in lake freights during the past week is due to this cause as well as to the increased demand for grain at the seaboard. At \$1 on ore from the head of Lake Superior and 2½ cents on wheat from Chicago to Buffalo—rates that seem about certain to be reached as a result of the present upward tendency in the market—there is some profit for the vessel owner just now, as high water and a reduction in operating expenses are advantages over last season. Boats that have been laid up are again started out, however, and aside from the movement at the head of Lake Superior, there is little in the ore business to warrant expectations of high fall freights.

There is no hope, of course, of any new sales of non-Bessemer, or even Bessemer, ores by the mining companies shipping through Escanaba and Marquette. From the Cliffs shaft of the Cleveland-Cliffs Iron Company it is announced, for instance, that the pumps were closed down last week and that the mine will be permitted to fill with water, and advices from Milwaukee are to the effect that the receiver of the Marine Bank, which holds a majority of the stock of the Chapin company as collateral for money loaned to Ferdinand Schlesinger, wants the courts to fix a minimum price, at which the mine can be sold, in order to allow the bank to realize upon the collateral. These instances are quoted simply as examples of conditions that have arisen from overproduction and from the depressed state of the iron industry during several months past, and from which there is as yet no indication of recovery. Coal is being shipped more freely, especially to Lake Michigan ports, but as vessels have been forced to take cargoes up the lakes all season, on account of very low freights on down trips, and as they will continue this practice more generally during the stormy fall season now approaching, any improvement in coal freights must be slow and unimportant.

### Breaking Records.

In eight hours working time the whaleback steamer Pathfinder was unloaded at Erie, Saturday, of 3,200 gross tons, and on the same date her consort, the Sagamore, was unloaded of a like amount at the P. Y. & A. docks, Ashtabula, in about the same time. The Pathfinder went into Erie at 7 a. m. and at 4:30 p. m. was out again and on her way up the lakes. J. H. Westcott, marine reporter at Detroit, reports that the boats passed down at 11:10 a. m. on the 21st and were up again at 9:50 a. m. on the 23rd.

The big steamer Centurion's cargo of corn from Chicago weighed out 147,812 bushels at Erie. This is 6,312 bushels greater than the largest corn cargo of the Selwyn Eddy, which boat has held the record previously. The Eddy also took a very big cargo of grain out of Chicago on her last trip, but it was made up of wheat, corn and oats.

### Revenue Cutters.

Within the past week bills have been introduced in Congress providing for four new revenue cutters, to cost about \$175,000 each. A measure introduced in the Senate by Mr. Mitchell of Oregon provides for two steamers on the Pacific coast, while Senator Lodge wants a boat on the New England coast, and Senator Mitchell of Wisconsin would have a boat built to take the place of the old Andy Johnson on Lakes Michigan and Superior. These measures are all supported by similar bills in the House from congressmen representing the same districts.

OCTOBER 2ND—Another popular one fare excursion to Chicago via the Nickel Plate road. Three trains each way every day.

### In General.

The Chicago Ship Building Company's new dry dock, which will be ready for use next spring, will cost about \$125,000.

Thomas A. Edison says that the metal of the future is not aluminum but nickel steel, which combines strength with pliability.

The revenue steamer Hudson, 98 feet long, built by Dialogue & Son of Camden, N. J., is fitted with triple expansion engines and a Ward tubulous boiler that is allowed 180 pounds pressure.

It may be said with truth that if the Erie canal were situated in any other country with the same possibilities for the advancement of commercial interests that it would long ago have been enlarged into a ship canal.—Maritime Register, New York.

At Lloyds a short time ago, a theatrical manager secured insurance against the death of a noted burlesque actor. The amount was large and the object of the insurers was to protect themselves against possible loss under a contract with the actor.

Congressman Grosvenor of Ohio was to have conducted a party of his associates on the river and harbor committee on a trip up the lakes during September, but on account of the close attention to duty required in Washington the congressmen could not arrange matters to suit the plans outlined.

The second of the big freight steamers building on the Clyde by Denny & Co. for the American line will be named Kensington. The boat built by J. & G. Thompson, which was launched a few weeks ago, was named Southwork. Kensington and Southwork are districts of Philadelphia.

The three-masted schooners Hattie H. Barbour, Helena, Lucia Porter and William F. Campbell and the bark Albermarle, all American, as well as the British barks British America and Strathern, were classed last week by the American Shipmasters' Association of New York, publishers of the record of American and Foreign Shipping.

A circular letter sent out by the Doty Engine Works Company of Toronto to patrons in Canada makes formal announcement of engagement of the services of Mr. A. Angstrom, formerly with the Cleveland Ship Building Company, and adds that the works are now equipped for the construction of high pressure, compound and triple expansion marine engines, Armington & Sims' high speed engines for electrical work, Reynolds and Corliss engines of all sizes, gas engines of one to ten horse power, hoisting and vertical engines, marine, stationary and portable boilers, Roberts' safety water tube boilers, Mosher water tube marine boilers and steel and composite yachts and steamships.

Builders of steel ships will shortly have a chance to bid on another naval vessel, a submarine torpedo boat. The report of the naval board appointed to examine the different types of submarine boats recommends that the Holland company be instructed to have their proposed boat built at some responsible ship yard, and that it be awarded the contract at its price of \$135,000. Of the \$200,000 appropriation, \$150,000 was intended for the boat and \$50,000 for experiments. There seems to be no reason why this contract from the Holland company should not be secured by one of the lake builders, unless the old question of treaty relations with Great Britain is again brought up.

Here is a mixed picture of present depression and future prosperity credited to Capt. Alex McDougall by a West Superior newspaper reporter: "There isn't much encouragement to build new ships when \$50,000,000 worth of tonnage on the lakes is not paying expenses. In the United States ocean carrying trade 1,000,000 tons of shipping has not moved this year. Great Britain has more tonnage idle than all the tonnage of the United States. Other European ports have 500,000 tons idle. We shall begin to build ships again as soon as there is a demand for them. We are planning to build two this winter. We are studying iron shipbuilding problems more than ever. Careful estimates show that the product which will make a ton of steel can be laid down here at \$5, which is the lowest figure at which the same can be accomplished in any part of the world. This condition will make Superior in twenty-five years the greatest iron manufacturing center on the globe, and we will ship iron wares by lake, rivers, and canals to the seaboard and for export. We will make ships and load with products to be sold to countries that would now be glad to sell us ships, and this whether we have free trade or not. A greater amount of dead weight tonnage, consisting of iron, ore, lumber, wheat, coal and general merchandise will be handled at the head of Lake Superior than at any other place in America."



# MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O.  
Chicago office, (branch), No. 706 Phoenix building.

SUBSCRIPTION—\$2.00 per year in advance. Single copies 10 cents each.  
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The books of the United States treasury department contain the names of 3,657 vessels, of 1,183,582.55 gross tons register in the lake trade. The lakes have more steam vessels of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of steam vessels of 1,000 to 2,500 tons on the lakes on June 30, 1892, was 321 and their aggregate gross tonnage 534,490.27; in all other parts of the country the number of this class of vessels was, on the same date, 217 and their gross tonnage 321,784.6. The classification of the entire lake fleet is as follows:

Class.	Number.	Gross Tonnage.
Steam vessels .....	1,631	763,063.32
Sailing vessels.....	1,226	319,617.61
Canal boats.....	731	75,580.50
Barges.....	69	25,321.12
Total.....	3,657	1,183,582.55

Tonnage built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

	Number.	Net Tonnage.
1888.....	222	101,102.87
1889.....	225	107,080.30
1890.....	218	108,515.00
1891.....	204	111,856.45
1892.....	169	45,168.98
Total.....	1,038	473,723.60

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

	St. Mary's Falls Canal.			Suez Canal.		
	1892.	1891.	1890.	1892.	1891.	1890.
No. vessel passages	12,580	10,191	10,557	3,559	4,207	3,389
Ton'ge, net regist'd	10,647,203	8,400,685	8,454,435	7,712,028	8,698,777	6,890,014
Days of navigation..	223	225	228	365	365	365

Entered at Cleveland Post Office as Second-class Mail Matter.

THE LATE ineffectual attempt of the steel steamer Centurion to push her way up the Chicago river beyond its mouth is a simple and clear demonstration of the fact that the onward march in lake commerce has passed the windy city, which must henceforth take rank with the small lumber ports that are fairly well adapted to a class of vessels now fast becoming extinct. Vessels to be built hereafter will hardly be constructed in accordance with the prescribed width of the bridge draws and the bars or dams at Washington and State streets in the city that has of late claimed all honors as the metropolis of America. It might be well to suggest, however, that the world's fair city draw in a long breath and blow these obstructions out of the river, thus maintaining its windy reputation, as well as its old time position as a lake port of some commercial importance. The owners of the Centurion, together with lake vessel owners generally, regret very much that there is not a commodious harbor at the head of Lake Michigan, as it is no longer profitable to ship coal cargoes to Chicago in vessels of a size adapted to the present harbor facilities; neither can they afford to send vessels of modern size in ballast, and unless they can be unloaded near the mouth of the river these modern carriers must leave Chicago out of their list as a port of entry. In fact the big city, with its railway power and attention directed to a canal scheme to the detriment of lake harbor improvements, seems to be bent upon a flat boat connection with the Mississippi, which is entirely in harmony with its harbor facilities. In future when chartering for Lake Michigan, it will be proper for vessel owners to fix the rate of freight, barring Racine and Chicago, as they now bar Tonawanda in chartering for Lake Erie ports. Someone should notify Chicago in a friendly way of the 20-foot channel project now under way, before the government removes from the head of Lake Michigan the light-houses and officers of the signal service to some part of the lakes more in keeping with the future needs of commerce.

LEGAL proceedings bearing upon the terrible disaster on the steamer Tioga at Chicago three years ago, in which twenty or more lives were lost by an explosion of naphtha, came to an end a few days ago when the officers of the Genessee Oil Company of Buffalo who had billed the inflammable and dangerous fluid as oil to save freight, were discharged and the indictments against them quashed on a mere technicality. The Tioga had not been described in indictments as a steam vessel, but merely as a vessel. Laying aside the question as to whether the oil dealers had ought to be severely dealt with in the criminal action brought against them, in addition to the losses which they suffered otherwise, it must be evident that the opportunities for resorting to technicalities in legal proceedings are fast causing general mistrust in the courts. Vessel owners and underwriters on the lakes are fast favoring the policy of settling their differences in cases involving money losses outside of the courts. This rule can, however, govern only a small proportion of the civil cases requiring the aid of the courts, and a radical reform in court proceedings must be the ultimate result of such occurrences as that just reported from Buffalo.

COMMISSIONER of Navigation O'Brien is said to have found from a study of hydrographic office statistics that there is an annual total loss of 2,172 vessels and about 12,000 lives in the entire ocean commerce of the world, the value of the ships and cargoes thus lost being about \$100,000,000. These figures seem to be overdrawn, and at the best can be only estimates of a questionable kind, but they are certainly more nearly correct than some of the figures put out by officers of the life saving service, who are continually putting out figures that would lead the average newspaper reader to believe a reasonable extension of their work would overcome all loss of life on our coasts. The life savers accomplish a great deal and their work is deserving of encouragement, but no reliance can be placed in their statistics of loss of life or property.

ACCORDING to the reports from England the big steamer Campania cost the Cunard company more than \$3,000,000, or nearly double the cost of the first of the two American line ships, New York and Paris, and yet the best that the Cunard boat has as yet accomplished is a reduction of five hours in the New York's record from New York to Queenstown, while the best westward passage of the Paris has not as yet been equaled. It is not surprising that there is disappointment in Great Britain over the Cunarder.

ALTHOUGH there is no possibility of improvement in freights this fall sufficient to warrant a general renewal of ship building on the lakes, the return to fairly profitable carrying charges, as at present indicated, may result in a few contracts being let later in cases where ships are intended for special service.

## The Siren.

The "siren" fog signal is manufactured at only one establishment in the world. The instrument consists of two superposed disks with a certain and like number of holes, one disk being stationary, and the other revolving, while at the same time air or steam is forced through the holes. When the holes are opposite each other the steam will pass, and, when not opposite, the passage of the steam is stopped. Thus, when one of the disks revolves, the steam passes in a series of puffs, and if these puffs succeed each other with sufficient frequency a note is produced, rising in pitch with the rapidity of revolution, and increasing in power with the pressure of the steam. The disks are revolved by a small steam engine, which also opens and closes a valve to allow for the passage of the steam, and thus gives what is known as the characteristic sound, for a siren used as a fog signal does not sound continuously, but gives a certain number of blasts of a definite length per minute. The steam is supplied by a boiler both for the engine and the siren, and, to avoid possible breakdowns, the boilers, engines and sirens are always in duplicate.—Safety Valve.

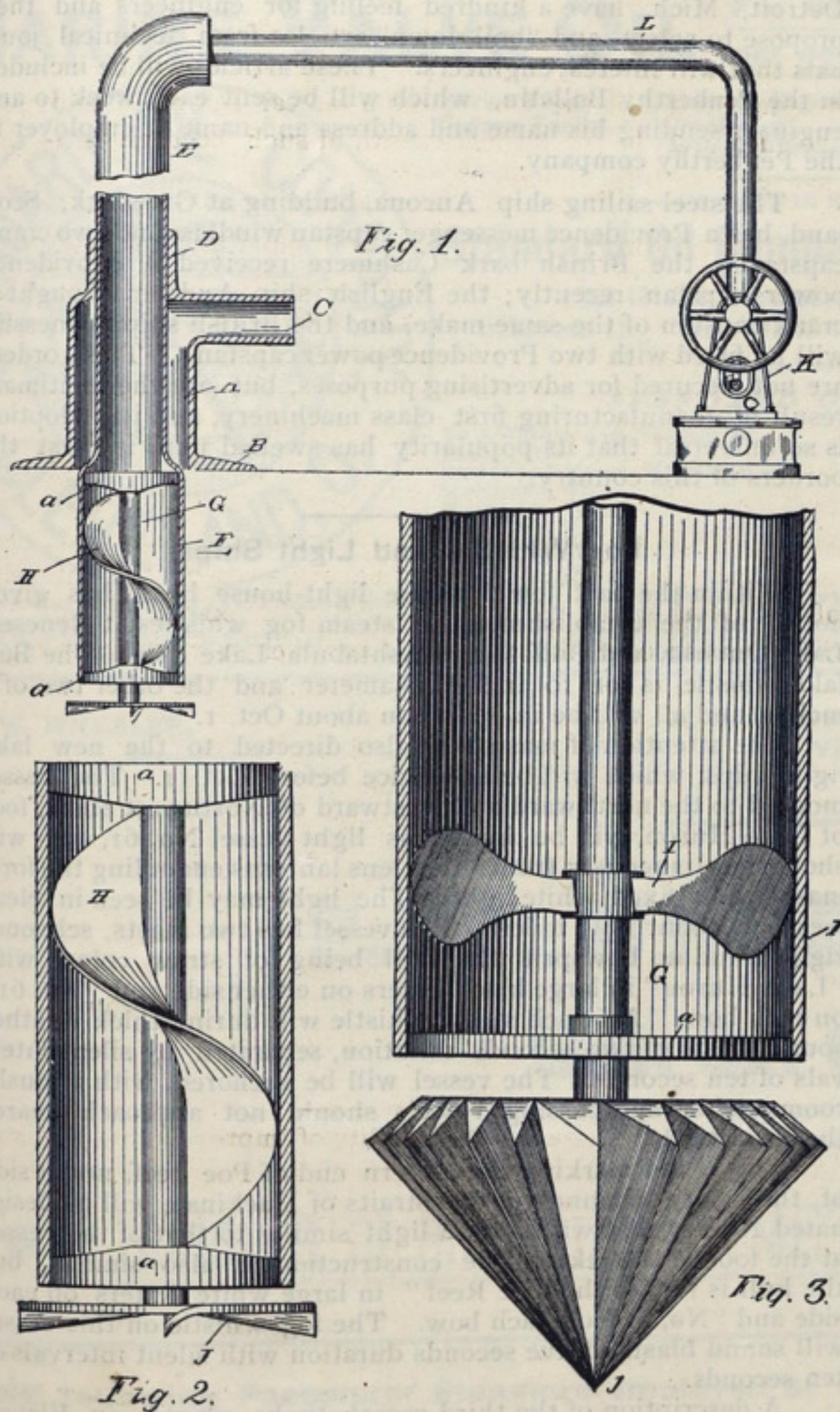


## Capt. Alex. McDougall's Patents.\*

BORING MACHINE—SPECIFICATION FORMING PART OF LETTERS PATENT NO. 469,840—DATED MARCH 1, 1892—APPLICATION FILED MARCH 3, 1891—SERIAL NO. 383,562—NO MODEL.

This invention relates to an improved machine for boring holes either on land or under water for posts, piles, telegraph-poles, foundations, wells, and mining purposes. The inventor says:

"The principle object is to provide a portable machine for these purposes which can be operated very cheaply and wherein all dirt, rock, or material from the hole which is being formed will be removed during the operation of boring the same. Another object is to provide a machine of the character mentioned, wherein all shafting or mechanical appliances for connecting the boring tool with the source of power are dispensed with. And



an enlarged base B and adapted to sit firmly on the ground over the hole which is being bored. This casing A is preferably provided with a nozzle C for the discharge of the water through the casing. It should be understood, however, that this discharge nozzle may be dispensed with, in which case the water would discharge out through the top of the casing. If the nozzle C is used, it is preferable to provide the casing with a cylindrical extension D, as shown, so that there can be no leakage of water at this point. E is a straight metallic pipe extending down through the casing A and provided with an enlarged head F at its lower end. This head F may be made integral with the pipe E, or it may be separated therefrom and secured to the pipe in any suitable manner. At the upper and lower portions of the head F are spider-arms *a a*, which are mounted in place in any suitable way, or they may be cast integral with said head. Mounted within these spider-arms is a shaft G, having its lower end extended some distance below the bottom of the head F. Mounted on this shaft within the head F is a worm H (shown in Figs. 1 and 2). Instead of a worm a propeller I may be used, as shown in Fig. 3. Both of these forms of devices have certain advantages, and I do not wish to be limited to the use of either. By changing the pitch of the worm or propeller, the speed of the same may be regulated. A boring-tool J is secured to the lower end of the shaft G, and is of a diameter slightly smaller than the interior of the casing A.

In Fig. 3 the form of boring tool illustrated is simply a well known burr, and in Figs. 1 and 2 the boring tool consists simply of a circular plate having ears or lips cut or punched therefrom, for which I make no especial claim herein. The first form of boring tool is more advantageous than the latter form, inasmuch as it will feed itself into the material to be cut. K is a pump placed at any suitable point and may be of any suitable construction. A steam pump is preferable, for the reason that a much more powerful stream of water can be thrown by this variety of pump than by any other. It should be understood that a pump may be dispensed with if there is a sufficient natural water pressure to the necessary work. The pump K is connected to the pipe E by means of a flexible pipe L, which is preferably a rubber pipe, so that the said pipe E will be free to move up and down. The operation of the device is as follows: The casing A is placed in position over the point where the hole is to be bored and the pipe E is allowed to drop by its weight, so that the boring tool J will rest on the ground. The pump K is now started, and water is pumped through the pipes L and E and head F, and this water will escape up through the interior of the casing and out through the nozzle C. As the water passes through the head F it will cause the worm or propeller to revolve, and in this way the boring tool will be operated and will bore into the earth to form the desired hole. The dirt which is cut up by the boring tool will be carried out through the nozzle C by the overflow of the water, and in this way there can be no accumulation of dirt. It will therefore be seen that the water not only operates the boring tool, but that it removes from within the hole the dirt which is accumulating. It will be evident that the device might be operated by pumping the water in through the nozzle C and allowing it to escape through the pipe E, and I would have it understood that this specification contemplates such modification.

"What I claim as new and desire to secure by letters patent is as follows: First—In a boring apparatus, the combination of a casing A, a pipe E, movable vertically within the same, a worm, propeller, or equivalent within said pipe and adapted to be operated by the downward flow of water through the same, and a boring tool connected to said worm or equivalent, substantially as set forth. Second—In a boring apparatus, the combination of a casing A, a pipe E within the same, a worm, propeller, or equivalent within said pipe E, a boring tool connected to said worm or equivalent, a pump K, and a pipe L, connecting the same and the pipe E, substantially as set forth."

## Steamships and Their Machinery.

We have received from Spon & Chamberlain, No. 10 Cortlandt street, New York, N. Y., a copy of "Steamships and their Machinery," by J. W. C. Haldane. It contains over 500 pages devoted to machine tools of ship yards, several chapters being given to descriptions of English and Scotch shipbuilding plants. The recollections of organization of a new engineering and ship building establishment are interesting. Two chapters treat of marine boilers and their design. There is not much of popular interest in the book, but it is valuable to managers and superintendents of ship and engine building establishments. The price is only \$6.

still another object is the production of such a machine wherein the boring tool will not be broken in case an obstruction is encountered, but will come to rest although the source of power may continue to operate. The principal novelties consist of a casing having an outlet-pipe by preference, a straight pipe passing through said casing and carrying a worm or propeller or screw wheel or equivalent device within its lower end, a boring tool beneath said pipe and connected with and operated by the said worm or other device, a pump or other apparatus for forcing water in said pipe, and a flexible pipe connecting said pump with said straight pipe, all adapted to the use intended. Fig. 1 is a sectional view of the apparatus, Fig. 2 an enlarged sectional view of the form of boring tool and the operating worm therefor, and Fig. 3 an enlarged sectional view of a modification of the same.

"A represents a cylindrical casing made of metal and having

\*Under this heading we will publish specifications accompanying letters patent granted to Alexander McDougall, of West Superior, Wis., since his first application for a patent on the whaleback type of vessel, May 1, 1880.



### Around the Lakes.

Shipments of hard coal out of Buffalo last week aggregated 89,324 tons.

Capt. Emmy of St. Clair, Mich., a few days ago purchased the lumber barge Republic from J. H. Wade of Cleveland for \$1,000.

Capt. John Martel of Sangatuck, Mich., has just completed the construction of the hull of a tug for Capt. John Dahlke of Chicago. It is 78 feet over all and 16½ feet beam and will be fitted with a 16x16 engine.

One of the government inspectors looking after the Horse-shoe reef work on Niagara river reports that the steamer Edward Smith passed down to the west of the inlet pier a few days ago drawing 13.5 feet of water with the water about 1 foot low, and she had two loaded barges in tow.

Capt. William S. Mack of Cleveland a few days ago turned over the command of the steamer V. H. Ketchum to Capt. L. W. Young, with the intention of giving up sailing entirely. His attention ashore will be given to the management of the five boats of the Lakewood Transportation Company.

Capt. James Davidson of West Bay City has laid another keel for a wooden steamer notwithstanding the unfavorable outlook in lake shipping. The dimensions of the new boat will be 257 feet over all, 37½ feet beam and 15 feet hold. She will carry 55,000 bushels of wheat on a draft of 14 feet and is intended for Welland canal trade.

An inspector from the treasury department looked over the revenue cutter Perry at Erie a few days ago, and report now has it that the boat is to be sent to Puget sound, to assist the Grant of New York in suppressing opium smuggling. Officers of the revenue marine service have been clamoring for more vessels on the Pacific coast, and the Perry, which is 165 feet long and mounts two 3-inch breach loading rifles could be fitted for sea service, but there is nothing official about the report.

Mr. I. G. Sowter, mechanical engineer, who was with the Dry Dock Engine Works of Detroit before that works was acquired by the Detroit Dry Dock Company, and who was retained by the latter company, has accepted a position with the Cleveland Ship Building Company. He will take charge of the design and construction machinery in the Cleveland works, formerly attended to by Mr. Angstrom, but for the present no naval architect will be employed, the duties in that regard devolving upon Mr. Bristow, superintendent of the ship yard.

It has been generally understood since the American Steel Barge Company built the steamers Washburn and Pillsbury for the "Soo" railway that the boats were constructed on a guarantee to do certain things in the way of carrying freight, and that since they were completed the railway company, or the St. Paul, Minnesota and Buffalo Steamship Company, the corporation operating the boats in connection with the railway, has held that requirements of the contract were not filled. The matter culminated in a suit brought a few days ago at Duluth. It is claimed that among other features of the agreement under which the boats were built was a stipulation that they should carry 3,000 tons package freight each, and when they were found to be short of this the buyers refused to settle, demanding that the contract be fulfilled or a rebate made from price amounting to \$1 per ton for cargo on each ton of deficiency for ten years, amounting to at least \$140,000. The barge company claimed the extra weight to be in added steel and offered what it supposed to be a reasonable deduction.

### Trade Notes.

The Harbor Ship Chandlery Company, Ashtabula Harbor, O., whose store was destroyed by fire recently, has purchased the grocery store of Smith & Mills. The company will continue the grocery business and add a stock of ship chandlery sufficient to carry on the business until spring, when their new store will be ready for occupancy.

Some enterprising boiler builder on the lakes will make what he thinks is an experiment with Serves ribbed boiler tubes, then buy up the right, and when it becomes generally known that the tubes save 10 per cent. per year, as compared with plain tubes, that boiler builder will have all the work he can attend to. The ten boilers of the latest Fall river line paddle steamer will contain 1,840 ribbed tubes, which cost \$20,476. Plain tubes would have cost \$3,239, but on each round trip this

steamer with plain tubes would burn 160 tons of anthracite coal costing \$688. Ten per cent. of this is saved by the Serves tubes. It is an easy matter to figure that in less than two years the saving pays for the tubes and the improvement thus goes on making 62 per cent. per annum. C. W. Whitney, 81 Fulton street, New York, is the agent.

It is not the wood nor the gold lettering on a pencil that costs, but it is the lead, and the better the pencil the more costly the preparation of the lead, but the costliest pencil is usually the most economical. There is no pencil concern in the United States that pays as much attention to the lead in a pencil as the Joseph Dixon Crucible Company. This care is also extended to the preparation of graphite for lubricating purposes.

An engineer can not always afford to pay for all the trade and technical papers that he ought to read, and employers will not allow bills sent in for that class of goods, although it would save them dollars if they did. The Penberthy Injector Company, Detroit, Mich., have a kindred feeling for engineers and they propose to select and "boil down" articles from technical journals that will interest engineers. These articles will be included in the Penberthy Bulletin, which will be sent each week to any engineer sending his name and address and name of employer to the Penberthy company.

The steel sailing ship Ancona, building at Greenock, Scotland, has a Providence messenger capstan windlass and two crank capstans; the British bark Cashmere received a Providence power capstan recently; the English ship Andelana bought a crank capstan of the same make, and the British ship Glenesslin will be fitted with two Providence power capstans. These orders are not secured for advertising purposes, but are the legitimate result of manufacturing first class machinery, and its adoption is so universal that its popularity has swelled until it burst the borders of this country.

### Fog Whistles and Light Ships.

Within the past few days the light-house board has given notice of the establishment of steam fog whistles at Genesee, Lake Ontario, and Buffalo and Ashtabula, Lake Erie. The Buffalo whistle is of 10 inches diameter and the other two of 6 inches, and all will be in operation about Oct. 1.

The attention of masters is also directed to the new lake light-ships, which will be in service before Oct. 1. The vessel moored to the northward and westward of Northwest shoal, foot of Lake Huron, will be known as light vessel No. 61, and will show simultaneously from three lens lanterns encircling the fore-mast-head a fixed white light. The light may be seen in clear weather about 13½ miles. The vessel has two masts, schooner rigged, and no bowsprit, the hull being of straw color, with "Lake Huron" in large black letters on either side and "No. 61" on each bow. A 6 inch steam whistle will during thick weather sound blasts of two seconds' duration, separated by silent intervals of ten seconds. The vessel will be anchored with a mushroom anchor, and passing vessels should not approach nearer than 200 yards.

The vessel marking the eastern end of Poe reef, north side of the south channel of the Straits of Mackinac, will be designated No. 62, and will show a light similar to that of the vessel at the foot of the lake. The construction is also similar, but the hull is red, with "Poe Reef" in large white letters on each side and "No. 62" on each bow. The fog whistle on this vessel will sound blasts of five seconds duration with silent intervals of ten seconds.

A description of the third vessel, to be placed on Eleven Foot shoal, Green bay, has not as yet been given out by the light-house board, but she is of the same construction as the other two and will differ only in color and possibly the character of light or the duration of the sound from the fog signal.

About Sept. 30, the structure from which the light on the west pier at Ontonagon, Lake Superior, is shown, will be moved about 430 feet nearer the outer end of the pier. The elevation and character of the light will remain unchanged.

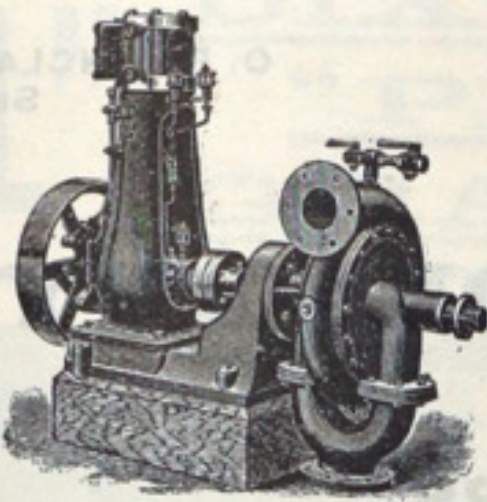
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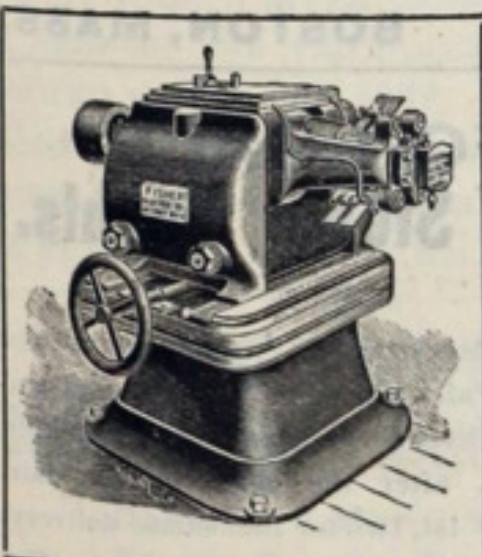
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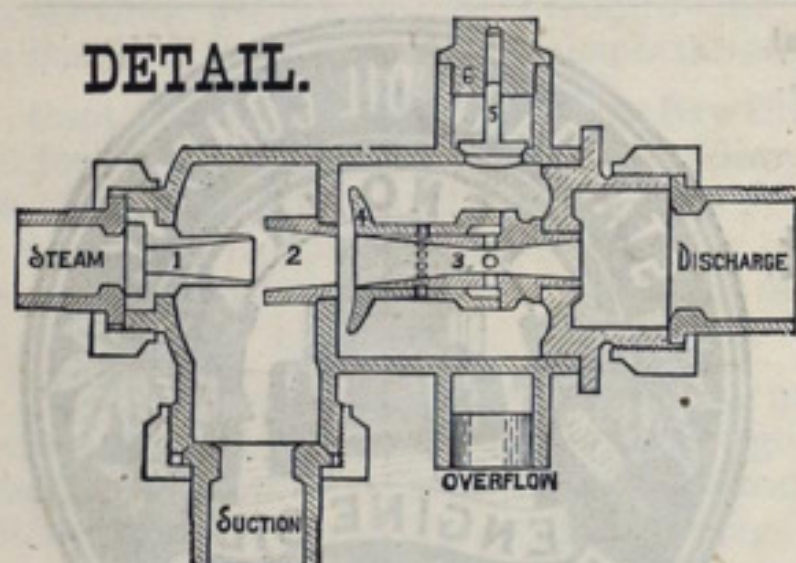
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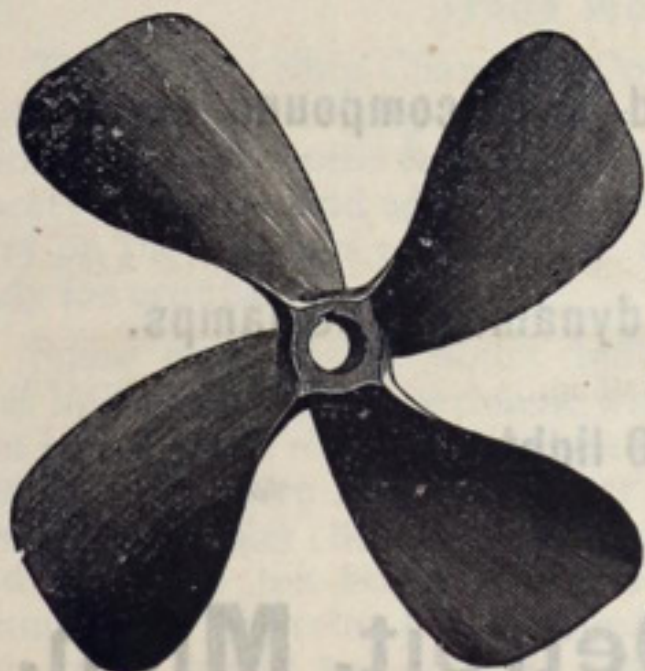
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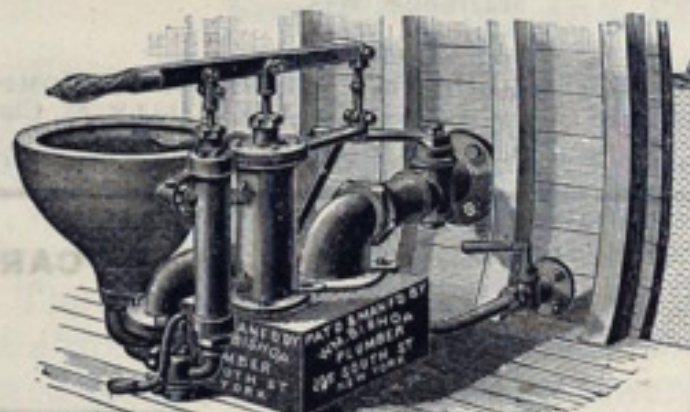
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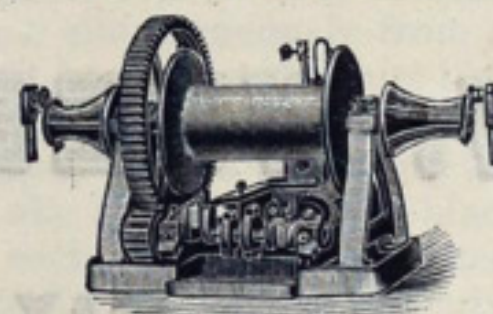
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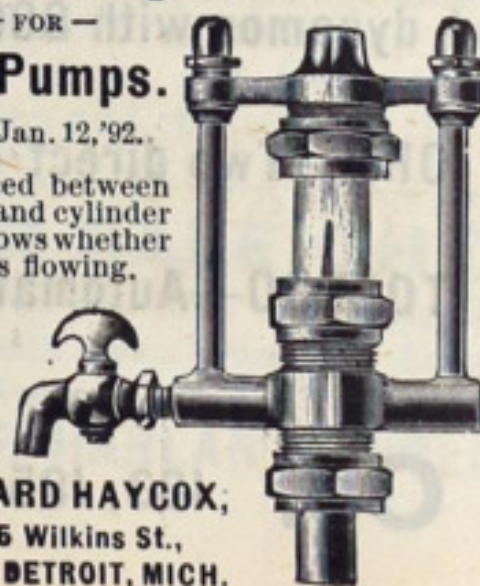
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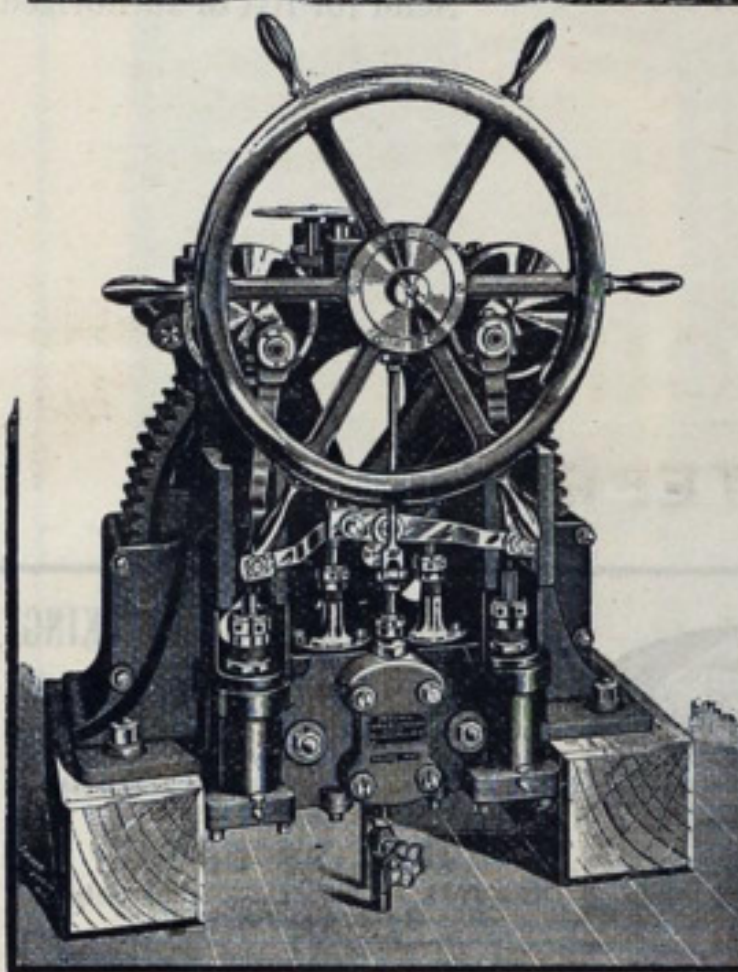
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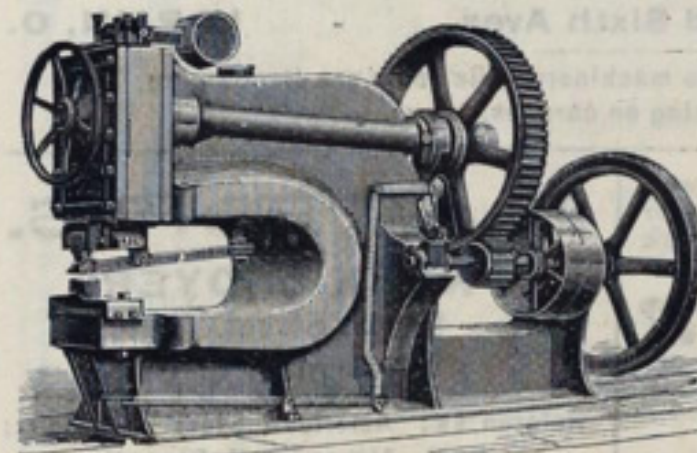
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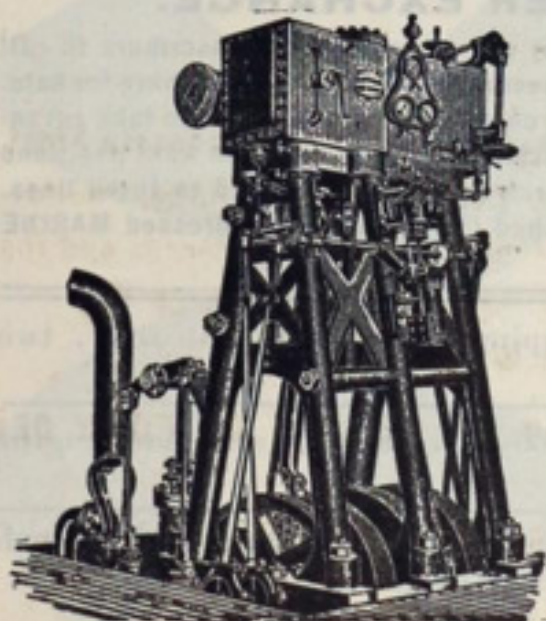
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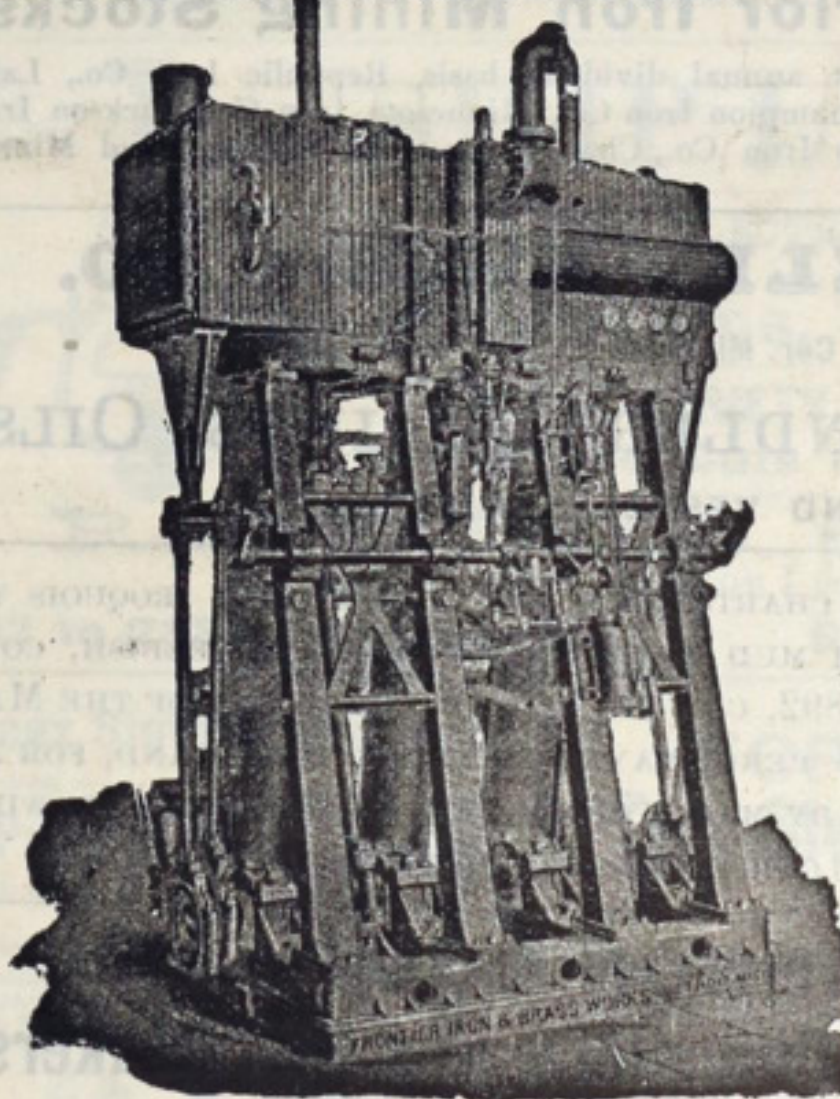
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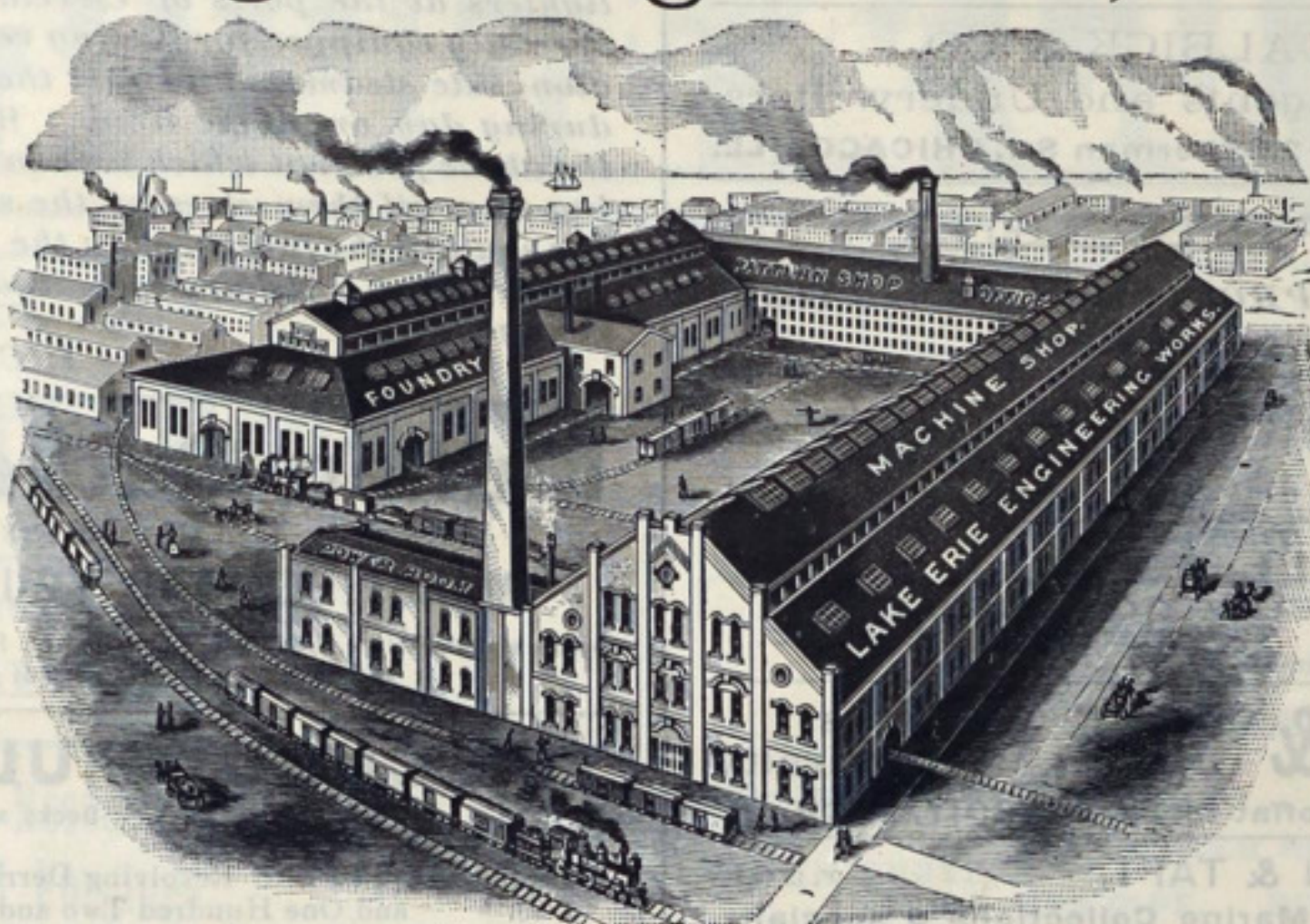


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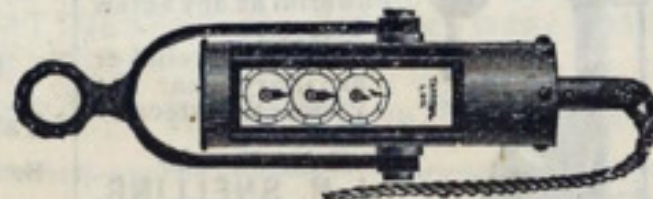
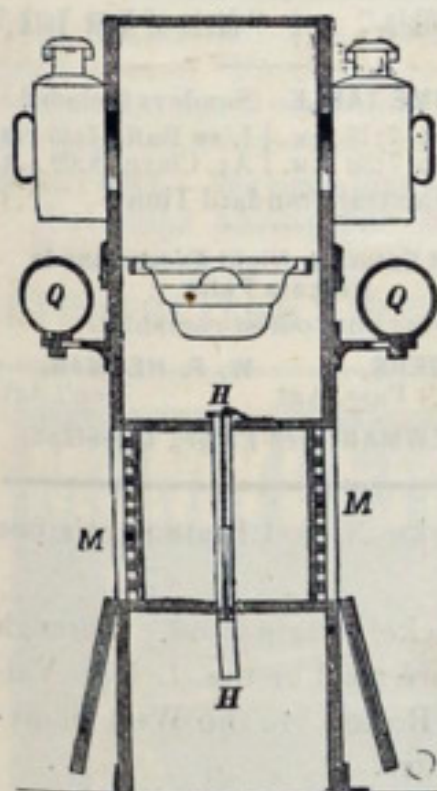
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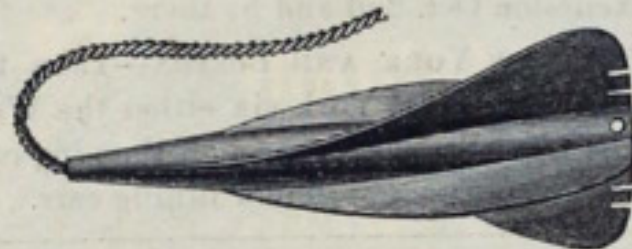
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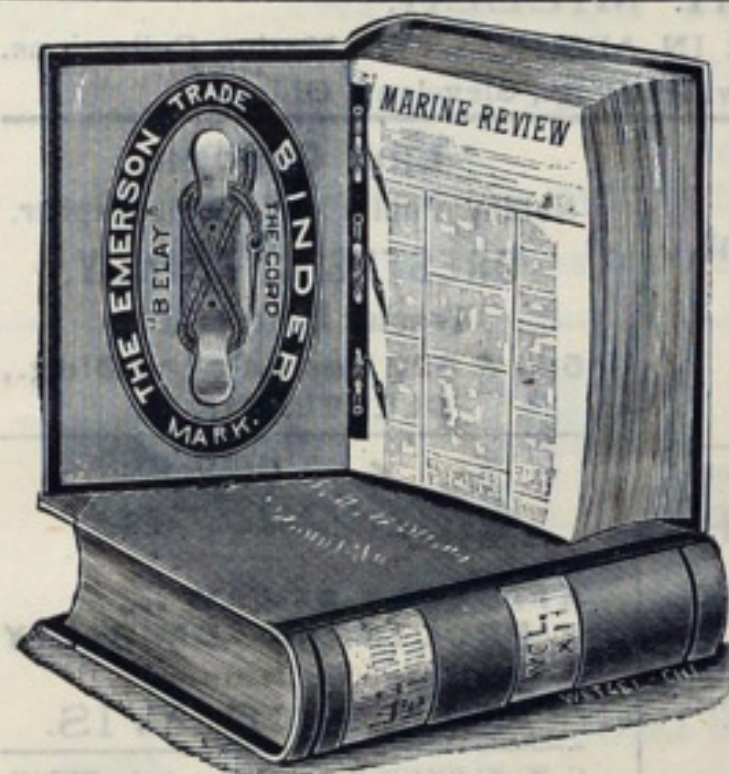


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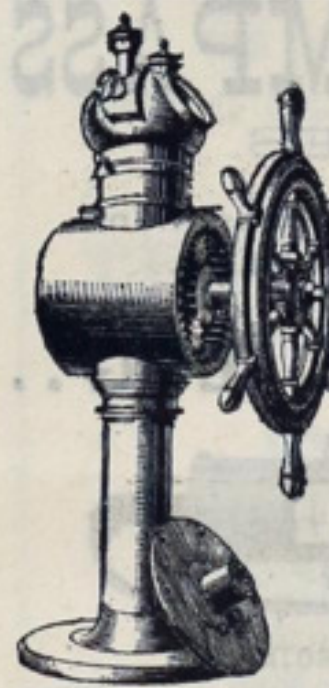
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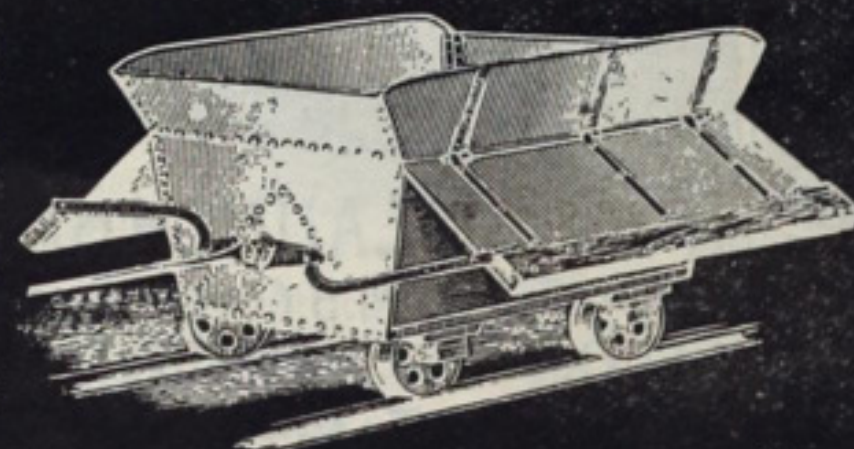
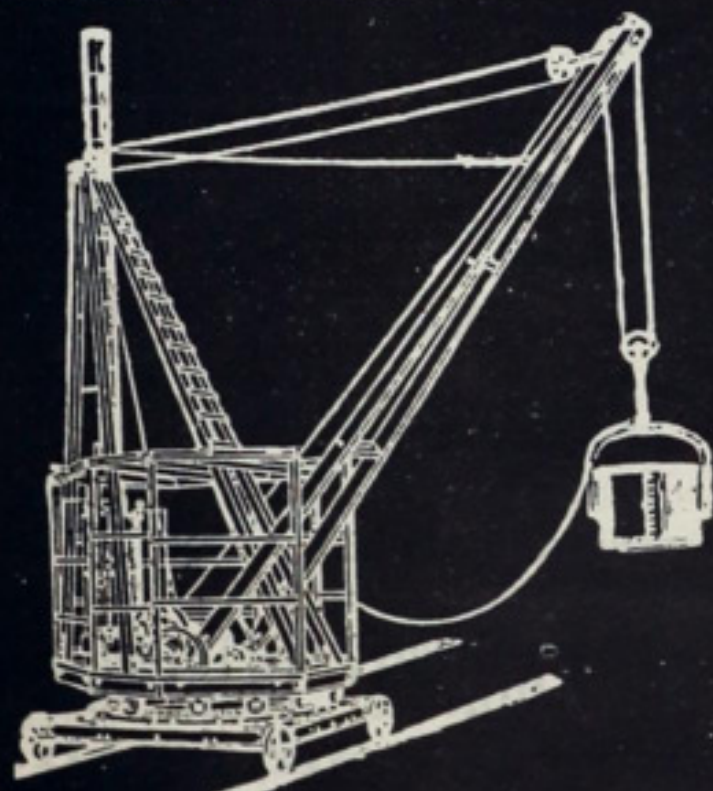
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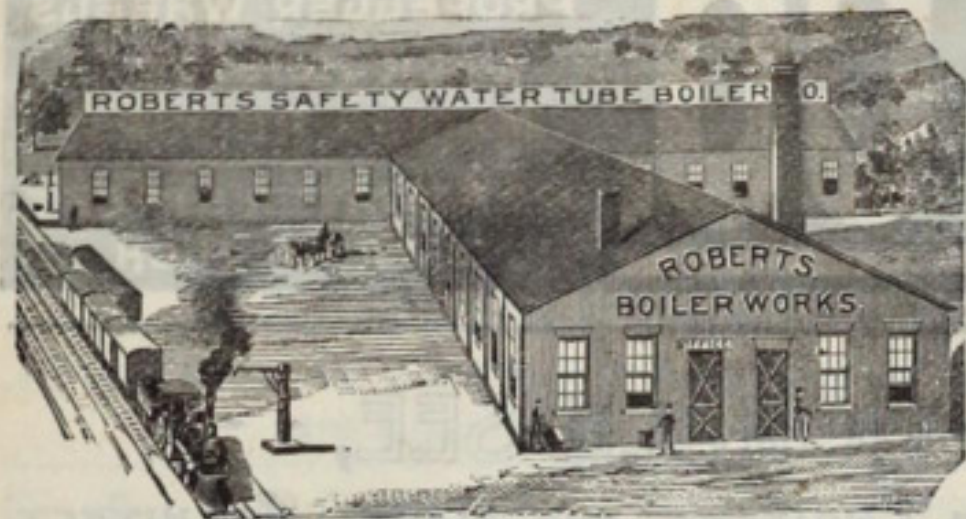
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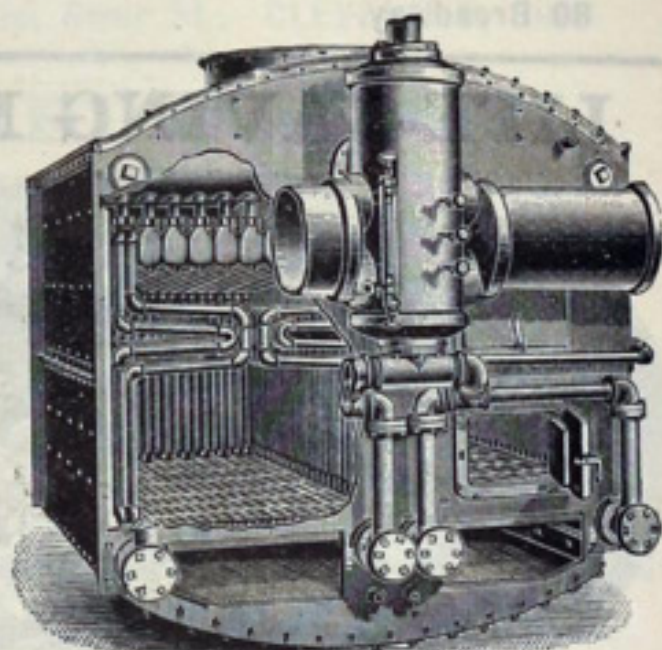
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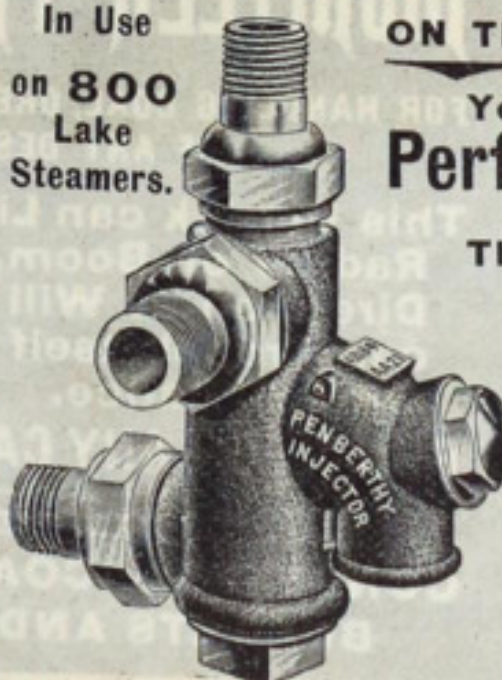
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